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|  |                                   |                       |   |  |
|--|-----------------------------------|-----------------------|---|--|
| AMENDMENT TRANSMITTAL LETTER   |                                   |                       | CLIENT-MATTER NO.:<br>66661-036 (P-IS 4988)   |  |
| SERIAL NO:<br>09/993,312   | FILING DATE:<br>November 13, 2001 | EXAMINER:<br>C. Smith | GROUP ART UNIT: 1631<br>CONFIRMATION NO.:5632 |  |
| INVENTION: MULTIPARAMETER INTEGRATION METHODS FOR THE ANALYSIS<br>OF BIOLOGICAL NETWORKS |                                   |                       |   |  |

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Transmitted herewith is a Response to the Restriction and  
Election of Species Requirements, mailed April 30, 2003, in the  
above-identified application.

- ☒ Small Entity status of this application has been  
established under 37 CFR 1.27.
- ☐ Petition for Extension of Time is enclosed (in  
duplicate).
- ☐ Terminal Disclaimer with fee under 37 C.F.R. 1.20(d) is  
enclosed.
- ☒ No additional claims fee is required.
- ☐ An additional claims fee is required and has been  
calculated as shown below:

CLAIMS AS AMENDED

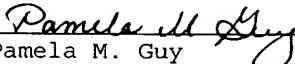
|   | NUMBER<br>AFTER<br>AMEND-<br>MENT |   | HIGHEST<br>NUMBER<br>PREVIOUSLY<br>PAID FOR |   | NUMBER OF<br>EXTRA<br>CLAIMS<br>PRESENTED |   | RATE                    |                 |   | FEE             |                 |
|---|-----------------------------------|---|---|---|---|---|-------------------------|-----------------|---|-----------------|-----------------|
|   |                                   |   |   |   |   |   | SMALL<br>ENTITY         | OTHER<br>ENTITY |   | SMALL<br>ENTITY | OTHER<br>ENTITY |
| TOTAL<br>CLAIMS   | 74                                | - | 74  | - | 0   | x | \$9                     | \$18            | = | \$0             | \$              |
| INDEPEN-<br>DENT<br>CLAIMS                              | 8                                 | - | 8   | - | 0   | x | \$42                    | \$84            | = | \$0             | \$              |
| FIRST<br>PRESENTATION OF<br>MULTIPLE<br>DEPENDENT CLAIM |                                   |   | YES   |   | X NO                                      |   | \$140                   | \$280           | = | \$0             | \$              |
|   |                                   |   |   |   |   |   | TOTAL<br>ADDITIONAL FEE |                 |   | \$0             | \$              |

- \* If the "HIGHEST NUMBER PREVIOUSLY PAID FOR" is less than 20, write "20" in  
this space.
- \*\* If the "HIGHEST NUMBER PREVIOUSLY PAID FOR" is less than 3, write "3" in  
this space.
- \*\*\* If the difference between the "NUMBER AFTER AMENDMENT" and the "HIGHEST  
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Serial No.: 09/993,312  
Filed: November 13, 2001  
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- \_\_\_\_ Please charge my Deposit Account No. 502624 the amount of \$\_\_\_\_, \$\_\_\_\_ of which covers the fee for a \_\_\_\_-month extension of time. A duplicate copy of this sheet is enclosed.
- X The Commissioner is hereby authorized to charge payment of any fees associated with this communication or credit any overpayment to Deposit Account No. 502624. A duplicate copy of this sheet is enclosed.
- X The Commissioner is hereby authorized to charge to Deposit Account No. 502624 any fees under 37 CFR 1.17 which may be required under 37 CFR 1.136(a)(3) for an extension of time in any concurrent or future reply requiring a petition for extension of time. A duplicate copy of this sheet is enclosed.

Respectfully submitted,

  
Pamela M. Guy  
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PATENT

Client-Matter No.: 66661-036 (P-IS 4988)

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Application of )  
Ideker and Hood )  
Serial No: 09/993,312 )  
Filed: November 13, 2001 )  
For: MULTIPARAMETER INTEGRATION )  
METHODS FOR THE ANALYSIS )  
OF BIOLOGICAL NETWORKS )

Commissioner for Patents  
P.O. Box 1450  
Alexandria, VA 22313-1450

Confirmation No.: 5632  
Group Art Unit: 1631  
Examiner: C. Smith

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RESPONSE TO RESTRICTION AND ELECTION OF SPECIES REQUIREMENTS

Responsive to the Office Action mailed  
April 30, 2003, consideration of the following remarks is  
respectfully requested.

Claims 1-74 are pending, and have been restricted under  
35 U.S.C. § 121 into the following six groups:

Group I: claims 1-43, directed to a method of  
predicting a behavior of a biochemical  
system;

Group II: claims 44-48, directed to a method of  
identifying functionally interactive  
components in a biochemical system;

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Group III: claims 49-56, directed to a method of identifying a component of a biochemical network via physical interaction map refinement;

Group IV: claims 57-63, directed to a method of identifying a component of a biochemical network via noting changes in a candidate network component due to perturbation;

Group V: claims 64-67, directed to a method of screening for compounds that restore a perturbation state of a biochemical system; and

Group VI: claims 68-74, directed to a method of diagnosing or prognosing a pathological condition.

Applicants traverse the restriction requirement for the reasons stated below. Nevertheless, in order to be responsive to the Office Action, Applicants elect the invention of Group I, claims 1-43, for examination. Applicants reserve the right to pursue prosecution of non-elected claims in a later filed application claiming the benefit of priority of the above-identified application.

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Applicants respectfully traverse the restriction requirement with respect to the division of the claims of elected Group I from those of Groups II through VI. Applicants submit that while the claims of Group I are patentably distinct from those of Groups II through VI, a thorough search of Group I claims will identify art relevant to Groups II through VI. In view of this, Applicants submit that search and examination of all claims does not pose a serious burden to the Examiner. Applicants request that the claims of Group I be rejoined with the claims of at least one of Groups II through VI.

Applicants submit that a search of Group I claims would reveal art relevant to Group II claims. In this regard, the claims of Group I are directed to methods that involve comparing two or more data integration maps, while the claims of Group II are directed to methods that can be used in preparing a data integration map. A thorough search of methods that involve comparing data integration maps would include a search of methods used to prepare data integration maps because references that describe comparing data integration maps will include those that describe both preparing a data integration map and comparing the resulting data integration map with another one. Therefore, Applicants submit that search and examination of the claims of Groups I and II together would not impose an undue burden on the Examiner.

With respect to the division of the claims of Groups I and III, Applicants submit that a search of Group I claims would reveal art relevant to Group III claims. The claims of Group III

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are directed to methods that can be used to prepare or expand a data integration map. As indicated above, a thorough search of Group I claims, which involve comparing data integration maps, would include a search of methods used to prepare or expand data integration maps. In particular, references that describe comparing data integration maps will include those that describe both preparing a data integration map and comparing the resulting data integration map with another one. For this reason, Applicants submit that search and examination of the claims of Groups I and III together would not impose an undue burden on the Examiner.

Further, Applicants submit that a search of the claims of Group I would reveal art relevant to the claims of Group IV. In this regard, Group IV claims are directed to methods that can be used in identifying a component of a biochemical network, which can be considered to be a subset of a data integration map. A thorough search of Group I claims, which are directed to methods that involve comparing data integration maps, would include a search of methods that involve preparing a data integration map, and thus also would include a search of determining a component of a network, which represents a step that can be used in preparing a data integration map. For this reason, search and examination of the claims of Groups I and IV together would not impose an undue burden on the Examiner.

In addition, Applicants submit that a search of the claims of Group I would reveal art relevant to the claims of Groups V and VI. The claims of both Groups V and VI are directed

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to methods that involve comparing data integration maps of two different conditions of a biochemical system. Because the claims of Group I also are directed to methods that involve comparing two or more data integration maps of a biochemical system obtained under different conditions, a search of the claims of Group I would encompass a search of the claims of Groups VI and V. Therefore, Applicants submit that search and examination of the claims of Groups I together with the claims of Groups VI or V would not impose an undue burden on the Examiner.

In view of the common body of literature relevant to the claims of elected Group I and those of Groups II through VI, Applicants assert that the Examiner would not be seriously burdened to search and examine the claims of Groups I together with claims of at least one of Groups II through VI.

Regarding the species election requirement

Applicants traverse the species election requirement for the reasons stated below. Nevertheless, in order to be responsive to the Office Action, Applicants elect with respect to the claims of Group I: species A, directed to a data integration map that is a physical interaction map; species C, directed to a biochemical system that is a cell; species F, directed to data elements that are in the form of nucleic acid expression, and species N, directed to a behavior that is an expression level. Applicants reserve the right to pursue prosecution of Group I generic claims once claims examined in view of the elected species are found allowable.

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Applicants respectfully traverse each of the species election requirements. While the particular species set forth on pages 3 and 4 of the present Office Action (Paper No. 6; mailed April 30, 2003) are patentably distinct, search and examination of the generic claims would not pose an undue burden on the Examiner. In this regard, Applicants submit that the species election requirement with respect to species A (data integration map that is a physical interaction map) and B (data integration map that is not a physical interaction map) should be reconsidered because data integration maps that are/are not physical interaction maps share a common type of search. Thus, search and examination of the claims of Group I with respect to data integration maps that are/are not a physical interaction map would not cause undue burden to the Examiner because.

Similarly, search and examination of more than one of species C, D, or E (a biochemical system that is a cell, tissue or organism, respectively) together would not pose an undue burden to the Examiner because these species share a common type of search. Regarding species F, G, H, I or J, (data elements that are nucleic acid expression, protein expression, polypeptide-polypeptide interaction, nucleic acid-polypeptide interaction, metabolite abundance or growth rate, respectively) Applicants respectfully submit that the election of species requirement should be reconsidered because data integration maps generally contain at least two types of data elements. As such, a search of the claims of Group I would reasonably encompass all types and combinations of data elements. With respect to species L, M, N or O (a behavior that is a cellular phenotype,



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biochemical activity, expression level or accumulation level, respectively), search of more than one of these species would not pose an undue burden to the Examiner because they would be encompassed by a common search with respect to the outcome of comparing data integration maps.

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### CONCLUSION

In view of the above remarks, Applicants elect the claims of Group I (claims 1-43) for examination, and request that the Examiner reconsider the restriction requirement and examine the claims of at least one of Groups II through VI together with the elected claims. In addition, Applicants elect the following species with respect to the claims of Group I: species A, directed to a data integration map that is a physical interaction map; species C, directed to a biochemical system that is a cell; species F, directed to data elements that are in the form of nucleic acid expression, and species N, directed to a behavior that is an expression level. Applicants request that the Examiner reconsider the species election requirements and examine the claims as written.

The Examiner is invited to call the undersigned agent or Cathryn Campbell if there are any questions regarding this application.

Respectfully submitted,

May 30, 2003  
Date

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